



Semester I Examinations 2010/ 2011

Exam Code(s) 4IF121
Exam(s) B.Sc. in Information Technology

Module Code(s) CT417
Module(s) Software Engineering III

Paper No. 1
Repeat Paper

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Instructions:

Candidates should attempt four questions, two questions from each section.
All questions carry equal marks

Use separate answer books for each section.

Duration

3 hours

No. of Pages 5

Requirements:

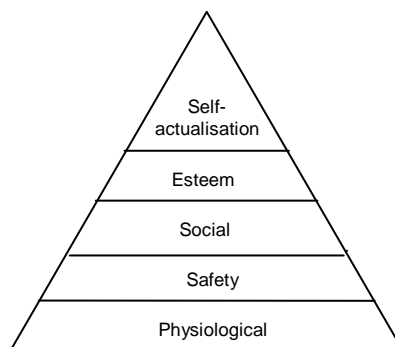
MCQ
Handout
Statistical/ Log Tables
Cambridge Tables
Graph Paper
Log Graph Paper
Other Materials

Release to Library: Yes ☐ No ☐

SECTION A

(Project Management)

1. (a) An electricity supply company is planning to change its billing system. Instead of sending out meter readers to manually record the meter readings each month, they now plan to equip them with hand-held wireless devices into which they key the reading and then upload the values to the server immediately. The new system requires that readings are now taken every two months instead of monthly. Draw up a top-level work breakdown structure for this system, listing the important milestones. [10]
 - (b) What HR problems might you anticipate during implementation of this system, and what suggestions have you for solving them? [5]
 - (c) Describe how you might develop and use the project performance technique Earned Value Management (EVM) to track the ongoing benefits of the above system. [10]
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2. (a) Do you think everyone can easily be a team player? What types of people have more difficulty being team players? What helps promote good team player behaviour? [5]
 - (b) The diagram below shows Maslow's hierarchy of needs. How does it relate to Information Technology projects? [10]



- (c) What categories of skills should be considered in selecting a project manager? Justify your choices. [10]

3. (a) What are the causes of uncertainty in IT projects? Distinguish between known and unknown risks. How might we plan for risks that we cannot identify in the Risk Management section of the project plan? [10]
- (b) When might you choose to “crash” a project? What are the indirect costs of crashing? [5]
- (c) You are the project manager for a large and complex software development. Three months before the software is due to be delivered, the customer requests a change they insist is critical that will require massive effort. How do you proceed? Develop a strategy for scope verification and change control for this project as a result of the above situation. [10]
4. (a) The IT department has its own methodology for doing software development. The engineering department has its own methodology for doing new product development. Teams from both departments are brought together to develop a new product with a significant software component. The IT team has decided that this is an agile project and they will use the Adaptive Project Framework (APF) model. The engineering department has always used a linear PM model and has no intention of changing it now. You are the PM, how would you solve this problem? [10]
- (b) What sort of approach would you use for an Agile project if your client wasn't willing or able to participate? What are the strengths and/or weaknesses of your choice? [5]
- (c) Describe Project Integration Management and analyse its relationship to the other 8 PMBOK areas using the example of your CT417 class project (i.e. B.A. Course Handbook) to illustrate. [10]

SECTION B
(Quality – Dr. Owen Molloy)

5. (a) From the perspective of an end-user of a software system (such as an online shopping site), how would you define Software Quality? **[8]**
- (b) You have been asked to measure quality at different stages in the life cycle of a project software development . Assuming the project follows a standard waterfall life-cycle, what metrics would you recommend at each stage in the life-cycle. **[9]**
- (c) You are asked to carry out a Kano analysis of a company's web site. Explain how you would carry this out and how you would present your results. **[8]**
6. (a) You have been asked to initiate a project to improve productivity in a development team. Having decided to use the DMAIC approach, describe:
- i. the main phases of the project
 - ii. the activities you would envisage
 - iii. the tools you would use in each phase of the project
- [15]**
- (b) Explain how Voice-Of-The-Customer analysis works and how you might carry it out for a commercial software product. **[10]**
7. (a) Explain the importance of the following Quality Management principles central to ISO 9000: **[10]**
- Customer Focus
 - Involvement of People
 - Process Approach
- (b) You have recently joined the QA team in a large software organisation. You have been asked to initiate a process for Code Reviews. Describe the following: **[15]**
- The advantages of performing code reviews
 - Potential issues which might be encountered
 - The roles which you think should be filled in each review team
 - How reviews should be conducted
8. (a) You have noticed that there is a large degree of variability in the defect rates achieved in different software projects. Explain what the cause of this variability might be. **[5]**

(continued overleaf)

- (b) Describe how you would conduct Root Cause Analysis to analyse the defect problem outlined in 8(b) above.

[10]

- (c) Describe (using examples) how tools such as Check Sheets, Pareto Charts, Histograms, Scatter Charts and Control Charts might be used to help in your analysis.

[10]